DATA PROCESSING DIGEST

1140 South Robertson Blvd., Los Angeles 35, California

a publication of Canning, Sisson and Associates, Inc.

VOLUME 6 NUMBER 7

JULY, 1960

General Information

AUTOMATIC DATA-PROCESSING SYSTEMS

Robert H. Gregory and Richard L. Van Horn
Wadsworth Publishing Company, Inc., San Francisco. 1960. $11.65

This is a real meat-and-potatoes book on business data processing, and the meat is both rare and well-done. The authors developed the book as a text for the Army Ordnance Corps, which may explain its complete detail and its top drawer view of automatic data processing. The preface suggests ways in which the book may be used. For example, those beginning their training in systems analysis are advised to read all the chapters in sequence, while management personnel might begin with Part Six (Equipment Acquisition and Utilization), then Four (Principles of Processing Systems) and Five (Systems Design) in that order.

Each chapter concludes with a summary (a genuine summary of what has been stated in the chapter, not a general statement that adds nothing to the content) and a list of pertinent references. These references are impressive--they cover the best books, articles, monographs, and papers which have been written in the field. The appendices include a brief history of computation for those who may be interested, and a section of questions and problems for each of the first 18 chapters. (Chapter 19 is a forecast of things to come.) An excellent glossary and index are included.

CONTENTS

The book is divided into seven parts: Orientation, Automatic Equipment, Programming and Processing Procedures, Principles of Processing Systems, Systems Design, Equipment Acquisition and Utilization, and System Re-Examination and Prospective Developments. These are designed for the serious business of understanding organization data processing and designing a complete information system as a basis for efficient management of the organization. In other words, the book is aimed at top management and those responsible for providing top management with the information required to run the business. We cannot think of an area of this responsibility that has not been thoroughly covered in this book. Automatic programing, a subject frequently neglected in run-of-the-mill books, is covered as close as possible to the book's publication deadline (apparently late 1959).

ENGINEERING DATA PROCESSING SYSTEM DESIGN

Arthur D. Even
D. Van Nostrand Company, Inc. 1960. $6.50

A few articles have appeared on the subject of automating engineering drawing files, but this is the first book we have seen that gives a complete description of method, equipment, and reasons for such a system. The major portion of the book is devoted to procedures for setting up a punch card file with microfilm inserts. The structure and organization of the engineering information department, selection and use of equipment, and systems and procedures for the project are thoroughly outlined. The final portion of the book goes into the areas of electronics. It is suggested that magnetic tape recording of pictorial information in the manner in which TV programs are presently recorded might provide an advanced solution to the engineering information storage problem. It is suggested also that closed circuit TV might be used to provide pictorial information to decentralized drafting rooms for quick reference. We were disappointed that the author did not tie in the storing of bills of material with an automatic material control system, even though we realize this was out of his area of coverage. We feel that the engineering and manufacturing departments are so closely allied at this point that a pioneer book in the field might have appropriately pointed out the possibilities of electronics in an integrated material control system.

DIGITAL COMPUTER PRINCIPLES

Wayne C. Irwin
D. Van Nostrand Company, Inc., Princeton, N. J. 1960. $8.00

Individual study is a lonely business--the student feels the need for contact with another human being. The most successful self-help books are those which give the student the assurance that the author is with him, helping him along each page, giving him special attention in the rough spots, patting him on the back when he suddenly gets a point. Such books are rare. More likely, the technical book available to the student will evoke the feeling of the classroom, and the student reading alone in his room will long for the reassuring bewilderment of his classmates, and the discussion which leads to insight more quickly than does the printed page.

This book appears to be the classroom variety of text. The explanations and examples of symbolic logic, number systems, Boolean expressions, and other computer principles, tend to escape the solitary reader, although they may very well provide the basis for a liberal education in the classroom. Therefore, it would seem to us that this book is far more usable by the author and those he might train to teach his subject, and the students attending his particular classes, than it would be to the average interested person who wishes to train himself in his spare time.

The book was written from the author's experience in presenting a training course at the National Cash Register Company. Its structure is unique in that it begins with details and synthesizes a general system. The progress is reflected in the section titles: Methods of Computation, Symbolic Logic, Mechanization of Logic, Mechanization of Storage, Timing, Mechanization of Arithmetic, Control, Communication with the Computer, Preparation of Instructions, Reduction of Errors, and Present Trends.

While we accept the author's assertion that the book is for the beginner, and "no previous acquaintance with computers, electronics or mathematics is necessary," we do feel that the book is definitely a classroom text and should not be expected to interest the casual hobbyist or the loner who hopes to enter the computer field through his den-room door.

COMPUTERS AND HOW THEY WORK

James D. Fahnestock
Ziff-Davis Publishing Company, New York. 1959. $4.95

A possible text for high school training in computers

At first glance, this book appeared to be clearly and simply enough written to be usable in the junior or senior year of high school for students who show an aptitude for the technical aspects of computer science. Accordingly, we asked a better-than-average high school junior of our acquaintance, who has an interest in electronics, to look through the book. A conversation about the book several weeks later, confirmed our first impression. He did, indeed, derive a large amount of information about the technical side of computers from reading the book. It was also evident that with the help of a skillful teacher in the classroom, the book could do good service as a high school text among upper division students with an aptitude and interest in electronics and mathematics. Our student used computer terms easily and accurately in his conversation with us, indicating that such terms as input, memory, flip-flop, gates, and "and" and "or" circuits were sufficiently explained to give the reader a fairly good understanding of their meaning. Our student mentioned some difficulty in understanding the functioning of a drum memory, and the part on programing apparently made little impression, as he was unable to converse about the programing function. However, this may have been caused by his orientation toward electronics rather than toward the symbolism of problem solution.

In addition to the high school student, the book was examined briefly by a young teacher now working on his masters degree in physics. He was impressed by the coverage and the clarity of the book, although he felt the subjects were dealt with rather superficially, and that the reader barely became interested in one subject before he was whisked into another. The author admits this in his preface: "All the major areas of computer technology are covered, some in more detail than others, but hopefully in proportion to the average reader's interest.... The technical material included in this book is intended as an introduction to the technician or noncomputer-trained engineer who is entering or interested in entering the computer field."

Ordinarily, we would not feel it necessary to give a book of this type more than a brief mention. However, there has been much talk of the need for training in computer sciences at the high school level, and little written for use as a text. We feel that this book may be an answer to this need, if used by a teacher who knows the subject well and who can introduce supplementary materials to guide and stimulate the students who could benefit from such a course.

SABE—SOCIETY FOR AUTOMATION IN BUSINESS EDUCATION

A society for Automation in Business Education is being formed to promote the growth and development of knowledge and understanding of automation among business teachers and educators. The organization will provide a forum for the interchange of fact and opinion concerning automation, and supply business education magazines with factual data of interest to their readers. Those interested in obtaining further information may write to Dr. E. Dana Gibson, Professor of Office Management, San Diego State College, San Diego 15, California, or to Mr. Enoch J. Haga, 272 Plum St., Vacaville, California.

BETTER METHODS AND SYSTEMS

BANKING, May 1960; pages 50, 51, 140.

Some questions and answers on bank automation are quoted from the NABAC eastern Regional Meeting. Here are a few of them:

In planning for automation all over again, what would you do differently? Start earlier. Most banks will find their files in poor condition, and correcting all the errors will take far more time than they anticipated.

How can you determine whether your volume is enough to warrant automation? A rough measure would be 20,000 checking accounts as the break-even point for check mechanization.

How about keeping your customers informed? Why bother. Tell them about the changes that will affect them. They probably don't care about the rest.

Aren't there other ways of encoding checks that are as good as E-13B? This plan is now uniform throughout the U.S. and several foreign countries and is the only method widely accepted and compatible with currently produced equipment.

NABAC RESEARCH ON SAVINGS OPERATIONS

The NABAC Research Institute has been applying the Monte Carlo method to research on savings bank operation. Some of the questions being answered through use of this technique are: When does the bank need to add new windows? How long will customers have to wait for service? What happens to service when a window is temporarily closed? During what hours would opening of an additional window reduce queues to an acceptable maximum?

STATUS OF ELECTRONIC DATA PROCESSING IN BANKING

AUDITGRAM, May 1960; pages 32, 33.

A chart shows statistics compiled by NABAC Research Institute from a survey of larger banks. It shows the number of banks that have installed electronic computers and/or MICR sorters; the number of banks that have placed orders for such devices; the number of banks that have taken steps toward installation but have not arrived at an order decision. The type of computer installed is also included.

SANS—A SIMPLIFIED ACCOUNT-NUMBERING SYSTEM

George G. O'Brien, Henry F. Sherwood, Richard E. Trueman,
Touche, Ross, Bailey, and Smart, Detroit, Michigan.
JOURNAL OF RETAILING, Spring 1960; pages 19-26.

SANS is a method of numbering accounts "which will provide almost exact simultaneous alphabetic and numeric sequencing even for a growth of several hundred per cent in the size of the original account file."

"The original accounts are ordered alphabetically and then numbered so that there will be 's' unassigned numbers in the interval between each account. 's' is therefore the interval size and will be chosen always equal to 2^k-1, where k is some positive whole number. Thus, for k=1, s=1; for k=2, s=3; for k=3, s=7, and so forth. As each new account is received, it can then be given a number just halfway between the two accounts which bracket it alphabetically. It can be seen that this interval-halving technique guarantees at least 'k' new accounts in proper alphabetic and numeric sequence between any two original account numbers. A new account falling alphabetically between two existing accounts already bearing consecutive numbers will be assigned a number in what [is] termed an overflow area."

A workable system for straight numeric sequencing

Available numbers are partitioned into groups of 1000. The size of the overflow area in a group is determined by the interval size and the number of intervals per group. "For an interval size of 127, for example, it would be possible to have a maximum of seven such intervals per group of 1000 numbers. Since there are 128 spaces per original account (the original account number plus 127 spaces), this leaves 1000-(7x128) or 104 spaces in the overflow area. The interval-halving technique could also be applied to the first 64 of the 104 overflow spaces, thereby assuring that at least the first 7 overflows in any group would be properly sequenced within the overflow area. It has not been demonstrated that sequencing part of the overflow areas is economically justified, although it intuitively appears to be if 's' is as large as 127."

Illustrations of the technique, and examples of its application are given in the article.

THE IMPACT OF COMPUTERS ON PSYCHOLOGICAL RESEARCH

BEHAVIORAL SCIENCE, April 1960; pages 170-187.

Papers presented at a symposium sponsored by the American Psycological Association, September 1959, include: Medical Diagnosis by Computer, Can the Computer Supplant the Clinician? A Computer As An Experimental Laboratory Machine for Research on Automated Teaching Procedures, Intelligence in Computers.... Theory Construction or Fact-Finding in a Computer Age? and a summary discussion of the ideas presented.

ELECTRONIC DATA PROCESSING IN FEDERAL TAX ADMINISTRATION

Julian K. Williams, Internal Revenue Service
THE ARMED FORCES COMPTROLLER, June 1960, pages 23-27.

The aim of the Internal Revenue Service is to make use of electronic computers to increase taxpayer compliance. This may be accomplished by assembling a prime file to effect accounting controls, and by maintaining prime files of continuity to effect consistency controls. In addition, the use of a computer will aid in compiling and classifying tax base data, interpreting the rules of taxation, and in computing the application of the rates. Excise taxation can also make good use of EDP, and the computing system can provide reports and statistics which would be of value to tax legislative counsels and to administrators. A computer could also compile a concordance of the Internal Revenue Code for more efficient look-up.

BUSINESS AND SCIENTIFIC COMPUTING—THE INEVITABLE MARRIAGE

Ralph Weindling, Urwick, Diebold, Ltd.
AUTOMATIC DATA PROCESSING, April 1960; pages 9-11.

New computing equipment is now available which has the characteristics to handle both data processing and scientific calculations. Examples are IBM 7090 and Honeywell 800. "Many companies find that the only way in which they can afford one of the new larger machines is through a combination of [business data processing and engineering or scientific computations]. Further, any calculation clearly indicates that, per dollar spent, the value received in calculating and data processing ability increases at a phenomenally fast rate as one goes from the small to the medium scale to the large scale machines."

Another factor that is bringing about the closer relationship between business and scientific computing is the "growing sophistication in certain business applications"--notably operations research, and the related management science techniques. Because of these closer functional relationships, "there will be increasing demands for cooperation between so-called technical people and business people. In many cases the two qualities will have to be merged in one person. ....In a fully automated factory, there is a very thin line between production planning and scheduling (a business function that would be considered business data processing) and the actual setting in motion of the physical production process, a function that in an automatic plant is becoming more and more that of the technician."

A NEW METHOD FOR THE PAYMENT OF BILLS AND THE TRANSFER OF CREDIT

Gerard Salton, Harvard University
JOURNAL OF THE ASSOCIATION FOR COMPUTING MACHINERY, April 1960; pages 140-149.

Present methods of paying bills require duplication of effort by the company, the customer, and the bank or banks. A new system is suggested, which has already been put into effect by some banks. In this system, the company issues a document to its own bank which is in effect, both a bill and a check on the customer's account in his bank. The company at the same time (or a few days prior) sends a duplicate of this document to the customer. This informs the customer that his account will be drawn on for the amount of the bill.

The document as suggested by the author, is compatible in size and arrangement with the customary bank check, carries the bank's routing symbol, and allows space for the imprinting of ABA MICR information at the bottom. While both copies of the document would carry identical information, those portions on the two copies which would be redundant to the bank or the customer would be blocked out on the respective copies.

Bills that double as bank checks

Authorizations from customer to bank, company to customer bank, and customer to company are required to carry out such a system. In the event that the customer's account may be overdrawn, it is suggested that the bank loan the customer's account enough to cover the draft, charging the customer for the service. If the customer were to be given a reduction on his bill as a reward for participating in the system, he would probably not object to paying such a service charge to the bank.

The system would be advantageous to the company in eliminating cash posting, and in reducing the time lag in payment. The customer would find the system to be a convenience, although he might find it more difficult to keep track of the status of his checking account. This would be minimized by his receiving a duplicate of the bill. Banks would find the system encouraging the establishment of checking accounts, however, this would be somewhat offset by the necessity for maintaining a customer authorization file, which would be more difficult to consult than is the usual customer signature file. An even more important disadvantage is that banks would tend to be forced to adapt their procedures to those of their largest customers.

Savings to utility companies which might use such a system are estimated at $3.00 to $3.50 per customer per year. These savings could be used to offer a reduction in billing amount to encourage customers to use the system, and as a service charge to banks for the extra services they would need to perform in the system.

WINDING UP THE STUDY—PLANNING AND PRACTICE, 4

P. T. Bridgman, Urwick Diebold, Ltd.
AUTOMATIC DATA PROCESSING, April 1960; pages 17-19.

This is the fourth in a series of articles on the design of a data processing system. See DPD, May 1960, page 4 for Part III.

After areas of work have been studied in detail, they should be examined for the possibilities of integrating. Input, filed information and output can be systematically compared by using a chart like the one below. Items of data are listed vertically and files and input containing the data are listed horizontally. The x's appearing under each column indicate the frequency of occurrence of the various data in the system.

DATA COMPARISON CHART

	Customer Data File	Sales Data File	Daily Order Input
Customer Code	x	x	x
Customer Name	x		
Customer Address	x		
Representative	x	x	x
Terms	x	x	x
Govt. Standard Reg.	x	x	

Look for duplications that could lead to integration

The output may be examined in the same manner, to show any duplication in existing reports and statistics which could be eliminated.

One approach to designing the system is to group the information for output into period cycles, and then to plan routines for each of the cycles in turn, beginning with the daily cycle. "It is necessary... to distinguish between the needs and limitations of the business or organization, and those imposed by the present equipment or system."

Accuracy and completeness of input data, provision for amending stored data during the operating cycle, provision for referring to stored information during non-operating periods and provision for exceptions are other factors to be considered in the system design.

Specifications upon which manufacturers can base proposals should include operations, time cycles, periods for producing information, content of input and files showing the number and form of characters for each item, content of information to be produced, and suggested forms of presentation of information.

THE FIRST YEAR'S EXPERIENCE WITH A LARGE COMPUTER IN A LIFE ASSURANCE OFFICE

R. L. Sutton, Confederation Life Association
THE COMPUTER JOURNAL, April 1960; pages 2-9.

This life insurance company's headquarters are in Toronto, Canada, where their IBM 705 is installed. The company decided to install a large scale computing system and convert the entire operation to it, rather than install an intermediate medium scale system and have to go through a reconversion in the near future. Three new basic files were placed on magnetic tape: a master file to be updated daily which contained all the basic information for each policy; a name and address file divided into 28 parts according to renewal date; a calculation file, updated monthly.

Three tape files from many information sources

These three tape files were produced from six separate card files, one large addressograph plate file (which included information besides the name and address), and several small miscellaneous files. Although the company thought their records were in good condition, they discovered 125,000 discrepancies during the conversion process.

Because the design of the system necessitated a complete reorganization of the office systems, the company found it impossible to operate the new system in parallel to the old system. Accordingly they conducted random tests and comparisons, and calculated certain totals at given points and compared them with corresponding results produced on the old systems.

Across-the-board operations for programers

In programing, they found it advisable to build each subroutine into each main program as required, so that the main program is largely self-contained. The optimum number of programers per supervisor they have found to be twenty. Each of the four or five units of programers is engaged in a complete cross-section of work--fact-finding, systems analysis, and machine instruction writing.

They learned the hard way to keep information for several cycles of operations. After some experience, they discovered that too many controls are as bad as too few. They have installed a device on the console which records every operation performed by the operator, so they can be reviewed later for their effects on processing. They found that the operators should have programing experience in order to cope with machine stoppages and to cooperate more effectively with the programers in accounting for machine stoppage.

During a period of 61 days (1464 hours), the installation was used for 1424 hours. The remaining forty hours was made up of five hours idle time, eight hours due to breakdowns, and 27 hours for preventive maintenance.

A SUCCESSFUL VENTURE IN COMPUTER SHARING

MANAGEMENT AND BUSINESS AUTOMATION, May 1960; pages 30-35.

The first two years of operation by SPAN have been declared "a complete success" by its president, Ragnar E. Anderson. This is the cooperative data processing center established by four insurance companies of Hartford, Connecticut. The center is firmly backed by the top management of the member companies who are willing to look constantly for new ways of using the center to further management aims. SPAN operates on an equal partnership arrangement, regardless of participant size. It has found that its operations allow time for renting computing facilities to other companies in the area. An IBM 7070 is on order to replace the original IBM 705.

"PHOTOMEMORY" DEVELOPMENT IN 60's MAY EQUAL COMPUTER BOOM OF 50's

OFFICE MANAGEMENT AND AMERICAN BUSINESS, May 1960; pages 55-63.

There is some information which is better left in its original form than translated into digital form for storage on magnetic tape. For example, correspondence, contracts, mortgage loan applications, credit files, deeds, are documents which are unsuited to computer storage, and which are more appropriately stored on microfilm.

It is possible to place such information in graphic form on microfilm chips, along with optical spots equivalent to the data contained in several punch cards. These can be sorted, searched, interfiled, and processed by machine; they are directly usable for projected images, and their digital information can be compatible with other machines such as electronic computers. Mr. John Waddell of Chicago Title and Trust Company told the AMA electronics conference delegates that he believed the use of photomemory devices would be as important in the next ten years as the development of computers during the past ten years.

ELECTRONICS FOR THE ONE-MAN OFFICE? BY 1970, AMA SPEAKER PREDICTS

OFFICE MANAGEMENT, April 1960; pages 15-17, 26, 79-80.

Frank H. Muns, of Westinghouse Electric Corporation, predicts that low cost, high speed transmission channels will make electronic data processing techniques available to every business, regardless of size. He sees EDP service sold as a utility much as electric power is sold now.

Systems Design

A SYSTEMS APPROACH TO INTEGRATED SYSTEMS PLANNING

Burton Grad, General Electric Company
AIEE Paper No. CP 60-331

It is the author's belief that "fundamental to the design of effective economic business operating systems is the principle of vertical integration. This...is in sharp contrast to the normal horizontal structure where each function of a business--engineering, manufacturing, accounting--has a clearly differentiated role in the information and physical processing system. Instead, the principle of vertical integration says: let the information and physical processing flow be a continuous chain; let it act like and look like a factory flow shop; let it process information and material either sequentially or in parallel with a clear product-oriented goal."

A business system should include both the information and physical processing aspects. This may result in the re-alignment of the organization to reflect the manner in which work is being carried out. Just as in the difference between a job shop (where we think in terms of the machine doing the work) and an assembly line or machining flow shop (where we think in terms of the product), the

Goal-oriented systems structures

horizontal and the vertical structures of business systems imply the difference between a work-oriented structure and a goal-oriented structure.

Viewing an integrated business system in the vertical manner leads the system designer to examine with "clarity and understanding the fundamental goals and objectives of a particular system, to grasp the external influences upon this system and to synthesize a comprehensive plan which will accomplish the stated goals and objectives within the external criteria, efficiently and economically."

A "good" system is one that works

A system is what the designer chooses to make it, and a "good" system can be judged as good only by the use to which it is put. A "good" system is a "set of related activities which in some way appear to be aimed toward a common specific goal. For example, the goal may be to receive customers' orders as input and perform all of those "main line" activities needed to ship a product to the customer to satisfy his wants. The system designer may include or exclude as many activities as he desires; but the entire system must be judged in terms of its usefulness and effectiveness.

The elements of a combined information--physical-processing system are: 1) inputs describing events; 2) a black box with five elements, a) information resources of the business, b) the decision maker (human or mechanized), c) communications channels, d) physical processor, e) physical resources (men, machines, materials); 3) the final result, which is some physical output and usually some type of information output.

Other resources in business which are more difficult to recognize and use are customers, vendors, and capital.

In summary, the systems approach to integrated systems planning implies three steps:

1. Understand the problem as a whole; see it clearly, unambiguously, quantitatively.

2. Don't try to automate today's procedures no matter how attractive this short-cut may appear to be.

3. Reconceive the system from the ground up. Design it as an entity--then detail it in segments.

A copy of the paper may be obtained from American Institute of Industrial Engineers, 145 North High Street, Columbus 15, Ohio. Ask for Paper #CP 60-331.

EQUIPMENT EVALUATION FOR DATA INPUT SYSTEM DESIGN—Part II

Roger L. Sisson, Canning, Sisson and Associates, Los Angeles
AUTOMATION, January 1959; pages 64-71.

One should try to design the recording process so that operating people are relieved of as much clerical work as possible. The system should pick up any required remaining data later in the processing, and the method of recording should promote accuracy and consume as little of the operator's time as possible.

"In studying data input devices, the distinction between pre-assigned and variable fields should be kept in mind, as the method of recording the two will vary. A preassigned field, such as a shop order number, can be recorded by some sort of copying or transcribing device wherein the operator does not have to give attention to the particular number. A variable field, such as the quantity of items made, must be completely inserted by the operator." As a general rule, it is wise not to try to predict variable fields, as most businesses change too rapidly to permit this. "In other words, do not put special restrictions on an operation for the convenience of the data processing system, unless real benefits can be shown."

Media for preassigned data

The most common method of reporting preassigned data is by tabulating cards. They are inexpensive to prepare and easy to read, and fit into many data processing systems. However, they have some disadvantages: they have no built-in redundancy; they are difficult to read mechanically if they are handled roughly; there is some difficulty in entering variable data along with preassigned data (often the variable data is handwritten and then keypunched onto the card--a time consuming and expensive process).

Another form of entering preassigned data is with special badges, embossed cards, punched tags, or coded shop order cards. The ideal method of reading preassigned numbers is to read them mechanically off the same form that the human requires for other purposes. This can be done with character readers, but such devices must be combined with some method for introducing variable data, and there is no opportunity for redundancy checks. The problem of entering variable data must be solved by the development of other methods of recording data which eliminate hand writing and therefore reduce the over-all cost. Some methods presently available which are machine readable are mark-sensed cards, keyboards, and dial settings.

Cash register limitations

One example of a method for combined recording of preassigned and variable data is the point-of-sale device proposed for department stores, in which the cash register function is supplemented with the facilities to read garment tags and customers' credit cards. Such a system will work only if 1) the point-of-sale mechanism forces the operator to perform the necessary functions in proper sequence, and 2) the operators are well trained. Such devices can introduce additional errors into the system, which must be provided for in error control analysis and system design.

Two other reporting devices should also be considered: intercommunication devices and closed circuit television. In communicating over longer distances than within the plant itself, the mail system may be considered as the most economical method where speed is not vital. In cases where speed is required, wire transmission must be used. This poses problems because the standard teletype 5-level code does not provide for a check digit, nor does it permit an unambiguous representation of the 45 characters and numbers ordinarily used.

Although standard units for department stores and shop recording will be available soon, many other systems will require special equipment or modification of system requirements, or even use of less sophisticated semi-automatic devices such as simple keyboards or intercoms.

Input design requirements

The design procedure should be as follows:

1. Study the data input requirements, and add new requirements which result from the study and design of the entire data processing system.

2. Select two or three equipment systems, and draw flow charts for each major transaction for each equipment system and for the present system (for comparison).

3. From these designs, plan error detection and correction methods.

4. Plot an error-cost curve for each major data flow.

5. Present for management review, and get a policy decision on how much management is willing to pay for error control.

6. Choose the appropriate system from the preliminary designs.

7. Fill in details of the systems and procedures.

8. Make a detailed cost study.

9. If the systems proves feasible, lay out a detailed implementation plan.

10. Initiate the program.

The economics of the input system are studied by the same methods used to study any other proposed capital investment.

Programing

COOPERATIVE MEETING OF USER GROUPS

Representatives of 17 computer user groups met May 6 to consider formation of a cooperative program among the groups to promote study, exchange of information, and cooperative effort in areas of common interest. A second meeting is scheduled for August 26 following the national meeting of the Association for Computing Machinery in Milwaukee. Information may be obtained from Jerry L. Koory, System Development Corporation, Santa Monica, California.

Recommended reading: If you want a good laugh and/or are fed up with BLISS, SOP, GOP and the rest of the acronymania of the computing world, try "Pooble-Oriented Languages," COMPUTING NEWS, April 15, 1960, page 11.

Equipment

BEYOND PRESENT HORIZONS

RESEARCH FOR INDUSTRY, May-June 1960; pages 2-4.

Stanford Research Institute is engaged in a long-range research program, sponsored by the Office of Naval Research, U. S. Air Force, and U. S. Signal Corps, to arrive at a future generation of computers by taking advantage of phenomena within the world of molecular size, a realm at least a thousand times smaller than the world of present micro-miniature components. Development of techniques available will result in fabrication of a hundred billion components within a cubic inch. Such devices, according to theory, could have switching times of a tenth of a billionth of a second, ten million times faster than the equivalent in the brain. These systems, possessing some of the characteristics of the human brain, such as learning, judgment, adaptation, may be the tools needed to solve some of the mysteries of the brain. A typical problem of great importance that requires computers of these capabilities is world-wide weather monitoring and weather prediction. It is anticipated that it will be many years before completed systems of this type will be available.

Applications

ON LINE SAVINGS AND MORTGAGE OPERATIONS

Everett J. Livesey, Dime Savings Bank of Brooklyn, New York
AUDITGRAM, May 1960; pages 16-24.

Some of the advantages and disadvantages of "on-line" and "off-line" systems in savings and mortgage operations are reviewed, with emphasis on the Teleregister system to be installed at Howard Savings, Union Dime Savings, and Society for Savings within the next few months. The problem of signature verification has been solved by Teleregister by means of a "scrambled" signature that can be read only through a special apparatus at the teller's window. The scrambling will vary from bank to bank, so that one bank's apparatus will not unscramble another bank's signatures. The equipment is being manufactured by LeFebure Corporation. Accuracy and error control, floor space reduction, the freedom for a depositor to go to any window, freezing of operating costs, and on demand production of management information are advantages of "on-line" systems. Disadvantages include cost of the system and the peripheral equipment, conversion costs, maintenance costs, the fact that the system does not handle exceptions readily, the need for exact control, and the lack of electronics experience among savings banks. One major problem with an "on-line" system would be unanticipated down time during operating hours. However, the Teleregister system has dual equipment, except for the drum storage, so that if one area of electronic operations goes out another is left to function.

COMPUTERS SPEED AIR SAFETY DATA

OFFICE AUTOMATION APPLICATIONS UPDATING SERVICE, May 1960, page IIIG9-1.

An eight-page report is given on the Federal Aviation Agency Air Route Traffic Control Center in Indianapolis, Indiana. "Prior to the installation of an additional 650 EDP System, exchange of flight data between traffic centers was from teletype to punched cards to RAMAC. Processing will now be direct; the new 650, after receiving flight messages from teletype lines, acts as a monitor and edits the messages, checks them for errors, and feeds them into the Ramac. The Ramac then computes and prints flight data, estimates flight arrival times over checkpoints, and determines airspace conflicts in flight plans." The FAA plans to install electronic computers in 30 centers throughout the country. Western centers will receive theirs within the next two years. The central section of the country will have coverage by the end of 1965. The computers will assist, but not replace, human air traffic controllers.

EDP IDEA FINDER

Canning, Sisson and Associates are pleased to announce the publication August 1, 1960 of the EDP Idea Finder, a functional reorganization in a single volume of DPD from 1957 through 1959, arranged for easy reference by subject matter. The nine large sections cover: The Role of EDP in Management; Design of the EDP System; Social, Organizational, and Personnel Considerations; Equipment and Equipment Techniques; Physical Installation; Management Sciences and Advanced Information Processing; Applications; EDP Outside the U.S.A.; and Other Resources (bibliographies, proceedings, etc.). A complete cross index and list of publishers and organizations is included. Price: $69. For complete information about the EDP Idea Finder, write to: Canning, Sisson and Associates, 1140 South Robertson Blvd., Los Angeles 35, California.

Training

Advances in Programming and Artificial Intelligence
Date: July 25--August 5, 1960
Place: University of North Carolina
Fee: $200

Introduction to the Use of Digital Computers
Date: July 25--August 5, 1960
Place: University of North Carolina
Fee: $150

Information for both courses listed above may be obtained from: James G. Steagall, University Extension Division, Box 1050, Chapel Hill, North Carolina.

EDP Installations in Operation--A Conducted Tour of Practical Applications, sponsored by San Diego State College

Date: August 8-20, 1960
Place: Tour starts at San Diego State College and includes Los Angeles, and vicinity, San Francisco, and vicinity, with sightseeing stops at Sequoia and Yosemite.
Content: Visits to large and small computer installations and computer manufacturers. Persons without automation background can benefit, as well as those who are familiar with the subject.
Fee: $135 plus meals (including bus fare and accommodations)
Course requirements: Credit for Upper or Graduate Division Status. For audit: college matriculation and consent of instructors
Registration: Dr. E. Dana Gibson, Professor, Office Management, San Diego State College, San Diego 15, California

American Management Association Seminars--Office Management Section
Date: August 15-19--"Data Processing Function"
"Information & Reporting Systems"
August 29-31--"Data Processing Evaluation"
And others in the systems and procedures field
Information: American Management Association, Seminar Registration, 1515 Broadway, New York 36, New York

A Development Program in O. R., sponsored by Case Institute of Technology
Date: September 20, 1960 to January 27, 1961
Place: Case Institute of Technology, Cleveland, Ohio
Information: Dr. E. Leonard Arnoff, Asst. Dir., Operations Research Group, Dept. of Mgmt., Case Institute of Technology, University Circle, Cleveland 6, Ohio

Meetings

Symposium on Computers and Data Processing, sponsored by University of Denver
Date: July 28, 29, 1960
Place: Estes Park, Colorado (Stanley Hotel)
Information: W. H. Eichelberger, Denver Research Institute University Park, Denver 10, Colorado

Bendix G-15 Users' Exchange Organization Annual Conference
Date: August 10-12, 1960
Place: Pittsburgh, Pennsylvania (Pittsburgh Hilton)
Theme: "Strategic Programming"

National ACM Conference
Date: August 23-25, 1960
Place: Marquette University, Milwaukee, Wisconsin

Recomp Users Group (RUG)
Date: August 25-26, 1960
Place: Denver, Colorado

SHARE XV Meeting
Date: September 12-16, 1960
Place: Pittsburgh, Pa. (Pittsburgh Hilton Hotel)
Information: E. B. Weinberger, Gulf Research & Development Co., Drawer 2038, Pittsburgh 30, Pa.

Univac Users Association
Date: September 22, 23, 1960
Place: Washington, D. C.

CUE, Burroughs 220 Users' Group
Date: October 4-6, 1960
Place: Philadelphia, Pennsylvania

Electronic Computer Exhibition and Business Symposium

Date: October 4-12, 1960
Place: London, England (Olympia)
Information: Mr. D. C. Scoones, Peat, Marwick, Mitchell & Co., 94-98 Petty France, London SW 1, England

NABAC National Convention

Date: October 10-12, 1960
Place: Los Angeles, California
Information: NABAC, The Association for Bank Audit, Control and Operation, 38 South Dearborn St., Chicago 3, Illinois

International Systems Meeting, sponsored by Systems and Procedures Association

Date: October 10-12, 1960
Place: New York, N. Y. (Hotel Commodore)
Information: Systems and Procedures Association, 4463 Penobscot Bldg., Detroit 26, Michigan

National Meeting, Operations Research Society of America

Date: October 10-12, 1960
Place: Detroit, Michigan (Statler Hilton Hotel)
Information: Albert Wallaert, M.D., Grosse Pointe, Michigan

The Institute of Management Sciences (TIMS) International Meeting

Date: October 20-22, 1960
Place: New York City (Hotel Roosevelt)
Subjects: Behavioral Science and Management Science, Applications and Tools of Management Science, Use of Computers in Simulation
Information: Mr. James Townsend, 30 East 42nd Street, New York 17, New York

Computer Applications Symposium, sponsored by Armour Research Foundation

Date: October 26, 27, 1960
Place: Chicago, Illinois (Morrison Hotel)
Information: Andrew Ungar, Armour Research Foundation, 10 West 35th Street, Chicago 16, Illinois

DATA PROCESSING DIGEST is published each month by Canning, Sisson and Associates, Inc., 1140 South Robertson Boulevard, Los Angeles 35, California. Subscription rate: $24.00 per year. Foreign postage (exclusive of Canada and Mexico): $2.50 additional. Single copies: $3.00 when available. Executive Editors: Richard G. Canning and Roger L. Sisson. Managing Editor: Margaret Milligan.

References

DATA PROCESSING DIGEST does not provide copies of the original material digested or reviewed in this issue. The publishers addresses are listed below for your convenience in writing to them for more complete information.

Armed Forces Comptroller
516 North Oxford Street
Arlington 3, Virginia

Auditgram
38 South Dearborn Street
Chicago 3, Illinois

Automatic Data Processing
Mercury House
109-119 Waterloo Rd.
London SE1, England

Automation
Penton Building
Cleveland 13, Ohio

Banking
12 East 36th Street
New York 16, New York

Behavioral Science
Mental Health Research Inst.
University of Michigan
Ann Arbor, Michigan

The Computer Journal
The British Computer Society
Finsbury Ct., Finsbury Pave.
London EC2, England

Computing News
Box 261
Thousand Oaks, California

Electronics
330 West 42nd Street
New York 36, New York

Journal of Assoc. for
Computing Machinery
2 East 63rd Street
New York 21, New York

Journal of Retailing
New York University
School of Retailing
Washington Square
New York 3, New York

Management & Business Automation
600 West Jackson Blvd.
Chicago 6, Illinois

NABAC, The Assoc. for Bank
Audit, Control & Operation
38 South Dearborn Street
Chicago 3, Illinois

Office Administration
146 Bates Road
Montreal 8, Canada

Office Automation, and Office
Automation Applications
155 Fifth Avenue
New York 10, New York

Office Management & American
Business
212 Fifth Avenue
New York 10, New York

Research for Industry
Stanford Research Institute
Menlo Park, California

D. Van Nostrand Company, Inc.
120 Alexander Street
Princeton, New Jersey

Wadsworth Publishing Company
431 Clay Street
San Francisco 11, California

Ziff-Davis Publishing Company
One Park Avenue
New York 16, New York